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carved in crests. Plate IV: 1, Sungaria. Lower valley of the Darbuti river. Fault valley. 2. The dead plain of Wildstrubal (Oberland). Example of fault worn by subsequent erosive action. Plate V: James Peak, Front Rocky Mountains. Senile forms rejuvenated by glacier action. Plate VI: The Stockhorn, Bernese Alps. An example of ancient glacial erosion. Plate VII: The Erg, seen from Taghit—contact of *erg* and *hammâda* (Algerian Sahara). Complex desert forms. Plate VIII: Cliffs of Pays de Caux and St. Jean de Luz. Elementary forms of littoral erosion.

THE INFLUENCE OF THE PRESENCE, DISCOVERY AND DISTRIBUTION OF THE PRECIOUS METALS IN AMERICA ON THE MIGRATION OF PEOPLE*

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In a previous section† was traced the exploration carried on by the three leading nations in America,—Spanish, English and French. The exploring parties in some cases became so large and numerous that they really constituted a migration, a flood of immigration. It is difficult to establish a line that will properly delimit explorers and adventurers from immigrants, but for all practical purposes those who come and roam about with no intention of remaining in a place may be classed in the first group; those who come ostensibly to remain, even though not permanently in one place, may be put in the second group. A migration has the idea of mass movement and for a more or less permanent home, while the exploring party is small and never intends to abide.

SPANISH MIGRATIONS. Myers‡ speaks of the migration of adventurers and colonists from Spain to America in the Sixteenth

* This paper is a portion of the thesis presented as a part of the requirement for the Ph.D. degree in Geography at Cornell University. For other parts see this Bulletin, Vol. XLII, pp. 594-602; Scott, Geog. Mag., Vol. XXVI, pp. 449-466; Vol. XXVII, pp. 417 and 470; Bull. Phil. Geog. Soc., Vol. IX, pp. 1-22; Vol. X, pp. 36-50. Special thanks are herein expressed for criticism and suggestion given by Professors R. S. Tarr, H. Ries, and W. F. Willcox, throughout the whole work.

† *Bulletin*, Vol. XLII, pp. 594-602.

‡ Myers, P. V. W. Gen. Hist., 1889, pp. 517, 518.

Century as to be compared only with that to California and the West in 1849 and subsequently. It was more scattered in destination, and less scattered in source. Moved by the stories of rich deposits, the desire for adventure and for a new home, thousands of Spanish and Portuguese took passage for the new continent. Because the treasure could be found in so many places, and because gold and silver had the greatest attraction, they occupied nearly all parts of South America and Mexico, and even established themselves in territory constituting at present southwestern United States. The mines in America, in these early days, drew no small part of their workers from the mines in Spain, although many of the laborers were Indians and Negroes; and, inasmuch as the precious metals were found well distributed over South America and Mexico, the colonists, scattered over all this region, have given an Iberian color to the life and activities of the whole territory.

ENGLISH IMMIGRATION. South American mines were worked nearly a century, before English immigration made a beginning on the North Atlantic coast and spread westward across the lowlands to the foot-hills from New England to Georgia; and, when the English immigration began, gold and gold hunting seem to have had little power over it. Other ends than wealth were sought. The men in that stream of colonists were almost uniformly in search of permanent homes surrounded by agriculture, lumbering, fishing, and the beginnings of manufacturing. How fortunate for these colonists that they found no gold and silver in the Appalachians, for probably, had they found deposits, their settlements would have been preceded by Spanish miners' camps, and their standards of life by those somewhat opposed to the arts of peace and husbandry.

Just as gold played no part in the immigration of the early English colonists to America, so the desire for gold was not the influence that led those waves of families and civilization across the eastern barriers and to the plains and prairies of the Mississippi Valley. Likewise, the expansion into the first row of States west of that great river, a growth partly antecedent to the discovery of gold in California, apparently cannot be traced to the influence of the precious metals. Nor can those several western movements which stretched to the Pacific coast prior to 1849, really be said to have had anything to do with gold. The Mormons were forced from behind to cross the great plains. The Oregon immigrants of 1843 were induced to go by the prospect of lucrative trade in furs. A scattered emigration from the eastern and central States sifted a

sparse population of hardy pioneers through the mountains or around Cape Horn into California, Washington, and Oregon. But the motive was *not* in the gold. The results of all this fragmentary and heterogeneous westward movement of the people played its part in 1849-1853, for, when the news of the brilliant discoveries along the American River went abroad, the response first began among those who had found their way into the vicinity for other purposes than gold digging.

LOCAL EFFECTS IN 1848. Californians were at first incredulous of the discovery, and for three months the news did not reach points outside the valley. Accordingly, the response did not begin until April, 1848. Then there began a cautious ingathering, which was quickly followed by an apprehension of the magnitude of the discoveries, a quicker dissemination of the news in ever widening circles and a hasty response to the influence of the finds. The widening circle of information could travel no faster than man could move from one place to another; hence, where geographic conditions made travel easy the circle enlarged rapidly, but on the Sierra side its expansion was greatly restricted. Consequently, the first rush of eager miners came from the California Valley and the limiting slopes of the mountains into the gulches of as many of the Sierra streams as were known to possess gold-bearing gravels. California-Americans to the number of 2,000 and California-Spanish-Mexicans and Indians, in the aggregate about 3,000, were at work by the middle of the summer. The population of the mining camps was varied, to be sure, during the first summer, but no more so than was that of California and the immediate vicinity at the discovery of gold, barring a few foreign sailors who deserted their ships in harbor. The cosmopolitan nature of the migration was a feature of subsequent years and not of the first. As soon as the news had time to get to Oregon, Northern Mexico, and the Sandwich Islands, after gaining credence near home, there started parties from these places, the Argonauts, Sonorans, and Kanakas;* and as the news of the discovery reached the far-off Peruvian and Chilian, so the response came quickly in considerable parties from each country.

So great was the excitement in the California Valley, and so contagious the gold fever, that few escaped the effects of the epidemic. The main valley in close proximity to the centers of influence was pretty well drained to the gulches before the close of the season of 1848. By June, three-fourths of the male population of San Fran-

* Bancroft, H. H. *Hist. of Calif.*, 1884, 7 vols., Vol. VI, p. 71.

cisco had gone. *The Star*, of San Francisco, May 27, 1849, contained the following vivid description:

"Stores are closed, places of business vacated, houses are tenantless, various kinds of mechanical labor suspended or given up entirely,—everything wears a desolate and somber look, everywhere all is dull, monotonous, dead."

Newspapers ceased publication by June; town council and the sanctuary services ended; sailors, and even officers, and sometimes captains, left ship in the harbor. Mexicans and Americans were equally affected; townsmen and farmers equally impetuous; judges, priests, doctors, alcaldes, criminals and their keepers, soldiers and their officers,—all classes went. Towns and farms were equally depopulated all along the valley and coast to San Diego.*

GOLD AND SILVER PRODUCING REGIONS ARE MOUNTAINOUS. But beyond the valley on the east for a thousand miles lay mountains and deserts; and on the west, the sea. Few miners could come from adjoining territory. It was uninhabited. The gulches, themselves, and their placers were in the mountains, and the quartz veins from which these placers and essentially all others of the West were derived, lay farther up in rugged, wild, mountain masses. This topographic distribution is a result of the origin and nature of gold deposits. The metal occurs in veins and fissures, hence in regions of metamorphism, folding, and faulting; in regions where rocks may contain heated waters, often associated with intrusions or with lava flows, sometimes not yet cold.† Silver occurs in similar regions and for the same reasons. Inasmuch as rocks which have been subjected to these dynamic processes are metamorphosed and often thereby hardened, and as, with the crustal disturbances, uplift has also occurred, the country, favored with the precious metals, is usually rough, high, mountainous, and difficult of access. Reference to lists of producing States, and a comparison of these lists with a physical map of the United States, will make it clear that almost all the gold and silver produced in the country comes from two widely separated mountainous areas.

When the gold of the Southern Appalachian States was found, mining began in the midst of a well settled region, in which food-producing industries were well established, and men, although busy with other work, were right on the ground. Further, the deposits were not extensive; hence, far reaching migrations did not occur. But when the California gold was found, and, later, when both

* Bancroft, *ibid.*, pp. 59, 263. Shinn, C. H., *Mining Camps*, pp. 109-114.

† Am. Inst. Min. Eng. (1903), Vol. XXXIII, pp. 790f.

metals were discovered in other Western States, the newness, roughness, inaccessibility, and distance to centers of population had successfully restrained any considerable accumulation of people and any development of other industries. Consequently, the rich and extensive deposits, by virtue of their geographic position and associations, did not find at hand labor and supplies for their exploitation; and, when the news of their discovery went forth, it called out a great migration; a migration from distant regions where labor was more abundant.

EXCITEMENT IN EASTERN UNITED STATES. Word of the unusual stir on the Pacific did not reach the Atlantic coast until late in 1848, because of the great distance and difficult transportation; and, during the winter and early spring of 1849, the news was spread far afield, until by the close of summer of that year knowledge of the mining possibilities there had become world-wide. No such widespread excitement had ever been known before; and nothing so far-reaching and influential has occurred since, although just as great discoveries of wealth have been made. The sweeping force of the craze arose from the remoteness of its source, and the consequent novelty and wildness, and from the richness of the deposits compared with anything known before. It was beyond the dreams of the ancients.

As the fact took hold of the people in eastern United States, thousands determined to go. Whitney conjectures that within a few months, some 50,000 of the healthiest and most energetic young men of the nation were on their way to California. So strong was the desire to go, that many started by one of the sea routes before the winter was over; and as the weather permitted, others departed by the land routes, until almost every town throughout the Eastern States had contributed a representative to the great army now closing in on California. Whitney estimates that 100,000 reached the region during the year 1849, among whom were citizens of every State in the Union. The estimate was probably a little generous.* Land routes were popular and supplied as many miners as the sea routes, but not so continuous a stream; because most were pro-

* Whitney, J. D., *Encyclopedia Britannica*, 9th Ed., Vol. 4, p. 701. Shinn, C. H., *Mining Camps*, p. 109. R. H. Patterson (*The New Golden Age*, Vol. 1, pp. 108-9) estimates the white population of California, in 1850, at less than 100,000, and quotes the census of Nov., 1852, at 170,000 whites. Shinn (*Mining Camps*, p. 132) says: "In December, 1849, there were 53,000 Americans in California." and a few pages later, states that in 1849 35,000 persons came to California by sea, and 42,000 by land. Not many had left for other fields as early as the close of 1849. Perhaps as much credence should be given to Whitney as to Shinn, who presents considerable discrepancy in his own statements.

hibitively closed during the winter, while one might sail anytime during the twelve months.

LAND ROUTES. Overland routes had been known for years prior to 1848.* The fur traders had worked them out, and the explorers had mapped some of them; but it should be remembered, that they were not made for continuous traffic across the continent. The connecting passes and high level routes had not become well established because so little used. Even the well ordered trails, formerly used primarily for freight, now became great passenger routes.

A common starting point was at the elbow of the Missouri River, but several towns in the vicinity became outfitting towns: St. Joseph, Westport, Leavenworth, Ft. Kearney, Independence, Kansas City, and even Omaha became important commercial centers in the effort to meet the needs of the trade. The northern routes to Laramie and South Pass conducted rather more emigrants westward than the southern route to Sante Fé, probably because the gold was mainly in the northern half of California, and because the emigrants did not know, or at least realize, that a longer journey, but at a much less altitude, by Sante Fé might bring them to their desired grounds equally as soon. Possibly the aridity and lack of settlements tended to keep people from the southern route, while the recruiting station at Salt Lake City offered a chance to rest by the northern line. The routes followed by the land emigrants through Salt Lake City led through rugged mountain passes and over long desert stretches; and then, as the pioneers approached the eastern flank of the Sierras in the rush to be first into the coveted gravels, they began to scatter and thus were compelled to use poorer, less traveled trails both up the slopes and through the passes of the crest. Having passed the summit, they scattered down the gulches from the Pitt in the north to the Tuolumne in the south. This brought them first to the upper ends of the steep, deep, defiles whose floors farther down were auriferous gravels.

These northern routes were beset by Indians. As long as the migration consisted of the fur-traders and an occasional settler, the natives cared little; but when the glamor and attractiveness of gold brought thousands of prairie schooners sailing across their grounds

* Chittenden, H. M. *Early Steamboat Navigation on the Missouri River*, 1903.

Chittenden, H. M., *Hist. of Amer., Fur Trade of The Far West*, 1902.

Fremont, J. C. *Report of The Expl. Exp. to Rocky Mts. in 1842, &c., 1845.*

Lewis and Clark. *Explorations in The North West.*

Parkman, Francis. *The Oregon Trail.*

Sample, E. C. *Amer. Hist. and Its Geographic Conditions*, 1903.

in one summer, and when towns and roads and all that drives out wilderness crowded in and claimed their habitat, they became restless, then revengeful. It only needed the lack of watchfulness on the part of the government, whose attention was elsewhere at the time, to permit the outbreak of trouble and hostilities between the Indians and the settlers in 1862.

Those who came by the southern route past Sante Fé, along the Gila River or the Spanish Trail, and across the Colorado River at Yuma into Southern California had to endure more desert, found a warmer climate, less rainfall, less forest, and had no great altitudes to traverse. They came into the California Valley and swung northwestward through the tule-covered swampland, or along the western foot of the mountains, and entered the gulches at their lower or western ends. They were led through territory already appropriated by Mexicans; and after the first summer, had not only the wicked Apache Indians to watch, but also the outlaw or the expelled Mexican miner who frequented these roads and robbed the traveler. Returning miners who presumably had in possession at least samples of California's treasures, proved most fascinating bait. Robbing became quite a business under the superior temptation presented by the returning miners, or by those going to new fields with their accumulated wealth in their belts. And not only was robbery committed, but occasionally entire parties were put out of the way by outlaws lurking in the defiles through which the caravan must proceed. In California, express companies abandoned their routes, because their goods so endangered the lives of their drivers. Robbing and murder were not local features but occurred on most of the trails and even on the highways between the mines and their trading centers.

The water routes worked out under the lead of gold were varied; but those broken at the Isthmus gave at least a possibility of a shorter time period than either the overland or Cape Horn route, hence they were always overcrowded. Until 1855, when the Panama railroad began duty, more emigrants, bound for California, arrived at the Atlantic ports than Isthmian transportation could be found for; and many more succeeded in crossing and reached the western ports than could find passage on the Pacific vessels to California, partly because so many Pacific ships were tied up at San Francisco. Consequently hundreds, probably thousands, were delayed between the two oceans, and became the prey of malarious diseases, which they were often unable to shake off, and therefore were never able

to grasp the gold they were seeking. A goodly number sailed around Cape Horn; and in these long journeys, subsisting on improper food, ran the risk of scurvy to which many fell victims. By December, 1848, the stream of emigration had become a rush. Ships were loaded at almost every Atlantic port. Vessels were drawn from the whaling business and from all kinds of trade greatly to the disarrangement of other commercial lines.*

GOLD CREATED GREAT MIGRATION. When one compares the small trickling stream of migration to the Far West prior to 1848 with the mighty river which surged through the passes and deluged the deserts between 1849 and 1856, he arrives at an expression for the magnitude of the influence emanating from the California gravels. Nor should the numerical response alone be taken as the measure of the influence. The obstacles to overcome, because the gold occurred in a far away mountain wilderness, were gigantic; over 3,000 miles by land for the far easterner; 2,000 miles for the prairie farmer; deserts, sand and dust, mountains and forest, snows and exposure, three or four months of severe hardship and privation; or, if by water, exposed for as long a time to dangers by sea; the sacrifice of home and its associations and comforts; the denial of friends, business and pleasures; and finally the expense of all this journey with only a hope at the end. Truly, tremendous, must have been that power over the lives of men to induce such enthusiasm and excitement, and to make men willing to submit themselves and often their families to such hardships. Chittenden† justly styles the movement as one of the most wonderful migrations of people on record.

Those going by sea were almost entirely from the coast regions, while those of the interior waited for spring to open up the land route. The response was strongest throughout the great Mississippi Valley, perhaps, because many of these people had moved once within the generation and were thus more susceptible to the moving fever than those farther east; perhaps, because they were nearer the gold fields.

Yet not only did the people of the eastern United States catch

* H. H. Bancroft (*Hist. of Calif.*, Vol. VI, pp. 121-5) gives the following figures attesting the volume of emigration from Eastern United States by sea: From six Atlantic ports between the dates of December 14, 1848, and January 18, 1849, 61 vessels carrying an average of 50 persons set sail. In the month of February, 1849, 60 vessels weighed anchor in New York Harbor loaded with California passengers, and 70 more in the harbors of Boston and Philadelphia. During the winter of 1849-50, 250 vessels sailed from Atlantic ports for California, 45 of which arrived in San Francisco Bay on the same day.

† Chittenden, H. M. *Early Steamboat Navigation on The Missouri River*, 1903, Vol. I, pp. 173, 4.

the gold fever and respond to the call; but, in the latter part of 1848 and during 1849, some 2,000 immigrants reached California from Oregon and Washington; and by July, 1849, 15,000 foreigners from Mexico, Chili, Peru, and other Pacific States had arrived. New Holland, Australia, the Marquesas Islands, and even China each sent its quota. Just a year from the discovery of gold, a flood of European emigrants, mostly British, arrived to try their fortunes.* In fact, nearly every civilized land was represented in the diggings of California during the course of the first five years. The Southern Appalachians happily sent to the West many men who knew the processes of placer mining, and found in California a larger freedom in which local mining institutions were rapidly developing.† European mining regions sent squads of miners trained in conservative methods of mining and disciplined in knowledge of camp life and organization, who contributed both to the common fund in their adopted country. Many miners from the south brought along a few negroes, thus adding another element to the ample heterogeneity of the mass collected around the mining centers of California.

Japan's stolidity under the almost universal excitement is somewhat remarkable; but it is asserted by Bancroft‡ that she was almost absolutely indifferent to all the world's bustle and flurry; and the almost total absence of the Japanese from California until many years after bears silent testimony to his indifference. With China, the case was very different. Either in direct response to the influence of gold in the rocks, or else with a desire to engage in some other business than mining, but tributary to it, her people came; 3 in 1848, 700 in 1849, over 3,000 in 1850, as many more in 1851, and about 10,000 in 1852, so that by the opening of 1853 at least 20,000 Chinese were in the State. Then the incoming rapidly declined.§ A great many arrived from the Hawaiian Islands and easily became the menial class. They were accustomed to it, and were willing, when there arose a need for such work, to be laborers of the lowest class. Moreover, the fact that gold had been acquired with simple, cheap equipment, and that no one had been able to hire laborers in the placers for what such laborers easily ran the chance of making when working for themselves, had given rise to a uni-

* Patterson, R. H. *The New Golden Age*, 1882, Vol. I, pp. 104, 5.

† Shinn, C. H. *Mining Camps*, 1885, p. 40.

‡ Bancroft, H. H. *Hist. of Calif.*, Vol. VI, p. 124.

§ *Ibid.*, Vol. VII, p. 335 f; Semple, E. C., *American History and its Geographical Conditions*, 1903, p. 319.

versal aristocracy with no true laboring class. When, owing to changed mining conditions, such a class became necessary, the ports of China were nearer in time, expense, and hardship than were the Eastern States, hence the Chinaman stepped in and became the common drudge.*

Prior to the discovery of gold in California, the Spanish-Mexicans were coming into the valley in greater numbers than the Americans. The query might well arise, would this condition have continued, had not the new mining industry invited the thousands to immigrate? And had it continued, would not the Americans, when the time came for their expansion, have found little desirable land unoccupied? The discoveries seem from this point of view to have been very timely.

INCREASE OF POPULATION. No statement of the increase of population in California will portray the phenomenal growth better than can be done with a few figures. Each year before 1848, a few had come until, by the summer of 1845, just prior to any emigration which could possibly be ascribed to the influence of gold, the State contained 2,000 Americans and as many Mexicans. In December of the same year there were 6,000; in July 1849, 15,000 and in December, 53,000. In June 1850, the total white population was 92,597 and in November, 1852, according to the census taken that month, it amounted to 269,000, of which about 30,000 were Indians, 20,000 Chinese and 2,000 negroes.† The center of population in the United States migrated 81 miles westward during the decade 1850-1860, the movement being about 50 per cent. larger than that of preceding decades, and a result of the emigrating impulse that was filling up the far western territory.

This same phenomenal growth of population has been witnessed in most of the newly discovered gold regions. In Alaska, the Nome coast furnishes an illustration where the conditions were even harder to meet than those of California. On January 1, 1899, a few Eskimo huts and one or two sod houses for white men were the only human habitations along 60 miles of coast. In June, a dozen or score of tents housed the entire population, and in October, 5,000 whites were dwelling on the beach.‡ Another illustration comes from Australia. Gold was discovered in Victoria in 1851. Previous immigration had been rapid, but at this time it took a sudden

* Semple, E. C., *loc. cit.*, p. 320.

† Patterson, R. H. *The New Golden Age, &c.*, Vol. I, pp. 108-9. Shinn, C. H. *Mining Camps*, p. 132. Abstract 12th Census of the United States, pp. 32-33.

‡ U. S. G. S. Prelim. Rept. on Cape Nome Region, Alaska, Brooks & Schrader, p. 45.

leap. In 1846, Victoria contained 33,000 people; in 1851, 51,000; and in 1854, 236,000.*

OTHER EFFECTS ON POPULATION. This rapid growth in the number of people was not the only effect of the precious metals on the population of the West. Society was masculine, and most of the men were under forty years of age. Only men of youth and vigor could make the journey or bear the privations and exposure of camp life. Wisely, the selection in the main occurred in the homes, and only the young, healthy men started. The novelty and wildness, the adventure and risk of the journey and of mining, appealed to the young men more than to those who were rooted in business or family. Shinn† says there were but 15 women in San Francisco in the Spring of 1849. There were many camps with none at all, and others containing but one family among, say 40 single men. Perhaps the inequality of the sexes numerically was greater among the Chinese than among any other nationality. In August, 1852, not one in a thousand among them was a woman.‡ Bancroft, after discussing the manliness and strength of character of the men who came under the influence of gold mining camp life, remarks that "the comparative superiority of the men over women is an expression of the law that the power of attraction due to gold and silver does not tear away from civilized and cultured comforts the same select grades of both. Nor do the mining habits develop the same admirable qualities in women as in men.§ Even in the report of the 12th Census 1900, there is shown a remarkable difference in the number of men and of women in the mining States of the West, a condition not entirely due to the mining industry, but partly to the fact that these States constituted a part of our frontier. Table I summarizes the population conditions in the mining States and Territories and in some others. In Arizona, Idaho, Montana, Nevada, Wyoming and Alaska mining constituted a larger per cent. of the total industries of the region than in the others, and here the largest percentages of male population were found. In Utah, although mining constituted a considerable portion of the business, religious influences kept the percentage of males lower than in any other State west of the Mississippi, except Louisiana. Nevada presents an interesting example. In 1880, her population was 62,266; and it has been declining ever since, while the percentage of females has been increasing. The declining industry through these

* Nicholson, J. S. *Effects of Great Discoveries of Precious Metals*, 1887, pp. 38-9.

† *Ibid.*, p. 137.

‡ Bancroft, H. H. *Hist. of Calif.*, Vol. VII, pp. 335f.

§ *Ibid.*, p. 715.

twenty years is that of mining. It seems probable that the miners who are going to other places are single men, while the family men in other occupations are remaining. If this be true, it emphasizes again the law that the precious metals attract for workmen, single men. Should it be charged that these western mining States possess a high percentage of male population, simply because they are on the frontier, the answer comes from all the States not engaged in this kind of mining whose settlement has taken place mainly since California began to be filled up, and which may, for this reason, be considered pioneer States. Table I, part B, summarizes the con-

TABLE I. POPULATION OF GOLD AND SILVER MINING STATES
CLASSIFIED BY SEX.

STATE OR TERRITORY.	POPULATION 1900.			PERCENTAGE.	
	MALE.	FEMALE.	TOTAL.	MALE.	FEMALE.
<i>Part A</i>					
Western Division....	2,297,732	1,793,617	4,091,349	56.2	43.8
Arizona.....	71,795	51,136	122,931	58.4	41.6
California.....	820,531	664,522	1,485,053	55.3	44.7
Colorado.....	295,332	244,368	539,700	54.7	45.3
Idaho.....	93,367	68,405	161,772	57.7	42.3
Montana.....	149,842	93,487	243,329	61.6	38.4
Nevada.....	25,603	16,732	42,335	60.5	39.5
New Mexico.....	104,228	91,082	195,310	53.4	46.6
North Dakota.....	177,493	141,653	319,146	55.6	44.4
Oregon.....	232,985	180,551	413,536	56.3	43.7
South Dakota.....	216,164	185,406	401,570	53.8	46.2
Utah.....	141,687	135,062	276,749	51.2	48.8
Washington.....	304,178	213,925	518,103	58.7	41.3
Wyoming.....	58,184	34,347	92,531	62.9	37.1
Alaska.....	45,872	17,720	63,592	72.1	27.9
<i>Part B</i>					
Indian Territory.....	208,952	183,108	392,060	53.3	46.7
Kansas.....	768,716	701,779	1,470,495	52.3	47.7
Minnesota.....	932,490	818,904	1,751,394	53.2	46.8
Nebraska.....	564,592	501,708	1,066,300	52.9	47.1
Oklahoma.....	214,359	183,972	398,331	53.8	46.2

ditions in five of this class. The disparity of the sexes is less than half as great in these five as in the eleven western states and territories excluding Alaska. Inasmuch as Oklahoma is by far the most newly settled of all, one would expect to find it approaching California; but while it has the greatest inequality of any of the five, it is as far from California as from Kansas, the state of the second group having the minimum inequality.

The population in California did not increase as fast as immigration might seem to warrant, because of emigration from the State to new gold and silver deposits, and because a reaction in mining matters set in after about five years of rush and excitement. The mania had run its course and was abating. It was influenced slightly, too, by a counter attraction in the Appalachian mountains.

There began about this time a general search for gold throughout the eastern mountains. Many men engaged in it; and under the stimulus of Western excitement, mining, as well as prospecting, revived in the East, although the output was rather decreased at first by the movement westward and did not recover for ten years. Another reason why California's population grew slowly after 1853, is found in the compulsory exodus of a large number of Mexicans and half breeds to Mexico; an expulsion deemed necessary, because the lawlessness of the Mexican had been much aggravated by the conditions in which the mining had placed him; and made possible, because there had responded to the call to come West so many more men from the States than from the south. The foreign population from the south, however, was only expelled when its character made it an undesirable element.*

PROSPECTORS AND RUSHES. The development of mining evolved the prospectors, whose whole purpose seems to have been to roam about and unearth new deposits of treasure. They scattered from the camps up the sides of the gulches, across divides laterally and down into parallel valleys, or out at the upper ends of valleys and down the eastern Sierra slope. Thus other gulches and their contents became known. Men worked their claims, and told or wrote to their friends what they had found, or so described it that similar deposits were identified elsewhere. Other men came to visit the mines and camps, and after a little examination declared that they had the same kind of stuff at home, and forthwith proceeded to prove it. By these exploratory wanderings the extent of the gold fields of California became known.

The prospector wandered out of the State and into others, made magnificent finds, or told of finding magnificent things; and immediately there were swarms of men, urged by strong desire, who were ready to leave sure things for the possibility of something richer. By this means there arose many local or even inter-state migrations of considerable bodies of men. Whole camps became fired with something akin to the feeling in the bosom of the roving prospector, but differing in that they knew where they were going, while the prospector never knew. Hundreds of rushes of men from one gulch to another occurred, thus scattering the miners in all directions. Camps often sprung up, mushroom like, in a night, and flourished a few months or even a year or two, and then were left deserted and abandoned, because the builders had taken a new attack

* Whitney, J. D. *Metallic Wealth of the U. S.*, p. 137.

of the gold fever. While such frequent moves were usually disastrous to many of the participants, they were factors of progress; and their final result was an ever widening benefit to the state and society, because they increased knowledge both of land and mineral; they mixed men in their period of rapid transformation and prevented local sectionalism; they diffused knowledge of methods of mining and reducing the ores; they acquainted men with several conditions under which the ore occurred; and in many ways made for the improvement of the industry and the more uniform development of the whole western region.

Examples of significant or extensive migrations by means of rushes are easily found and date from the beginning of the history of western gold mining. No sooner had the development of California's wealth gotten well under way than such emigration began. Sometimes, the particular provocation was a report of a promising bonanza, based on some prospector's discovered "traces of gold;" sometimes, it was a day's or week's hard luck in the home beds that sufficed to send forth the restless miner. In the Fraser River rush of 1858, 15,000 hardy men left California in four months, and other thousands later.* In the following year, thousands went to the Cariboo B. C.; and in 1860-1862, a multitude hastened to Idaho on the Clearwater and Salmon rivers. The Washoe rush occurred at the same time. During 1860-1862, Nevada sagebrush deserts and treeless mountains proved attractive, and California miners began to gather treasures from Humboldt, Esmeralda, etc. In 1862, a rush to Boise, Idaho, occurred;† in 1863, to Owyhee; in 1864, to Alturas; to Big Bend of the Columbia in 1865, and to White Pine in 1866. California lost to these regions in the last three or four of these years 30,000 to 40,000 men. Nor did all in each new place come from the one State; for the later rushes were made up in part of men who had become accustomed to rush, and in part of men fresh from the East, as well as of those who were leaving California for the first time. Rushing into new territory was not confined to the early days but continued down to the present century. Nor was it a feature of American mining; for Australia, in the fifties, had many wild, exciting rushes and occasional examples all along, until the famous West Australia excitements in the nineties, of which the Siberia rush was perhaps the most notable.‡ Klondike in the later nineties, and Nome in 1899 and 1900 with Thunder

* Bancroft, H. H. *Hist. of Calif.*, Vol. VII, pp. 682-3.

† Bancroft, H. H. *Hist. of Wash., Idaho and Montana*, pp. 406f; 418.

‡ *Amer. Inst. Min. Eng.*, 1898, p. 496.

Mountain, Idaho, in 1901-2 bring the rush down nearly to the present. The surficial nature of the gold occurrence in placers seems directly responsible for this peculiar character of migrations. Quartz deposits do not elicit the phenomenon, because it takes capital and machinery to get anything out of them, and the single handed miner with rapid development ideas can do nothing. In this shifting about, many became discouraged with mining and turned to other occupations, as they found suitable localities for grazing or cultivating. Almost all occupations were recruited from among the miners, as they had contributed to that class.

Rushing not only gave an impetus to all the Western States, but by this form of migration miners overflowed into British Columbia and even into Northern Mexico, teaching the Mexicans better methods of working. They affiliated with them, fought Indians for them, and prepared the way for closer international relations.* The wandering miners even spread into South America, Alaska, Australia, and the Transvaal, from all of which our own Western States have now received miners; and carried with them their laws and customs as well as methods of working. Often the transported Yankee mining notions were unworkable in the new conditions; but the ingenuity, which responded to the former conditions, was again sufficient to devise something that would work, and so the diffusion of ideas went on working beneficence all the way as surely as did those Crusades of the olden days.

REFLEX WAVE OF MIGRATION. The fact that the first great discoveries of gold and silver in the United States were very near the western coast, and that subsequent disclosures were made at varying distances inland, led to the reflexing of the wave of migration and development. All focussed on California for a few years; then other discoveries were made, in Oregon in 1852, Washington in 1855,† with Arizona in 1858, Nevada in 1859, and Idaho in 1860 or 1862,‡ completing the semi-circle around the first State. Colorado, a little out of time, was found to be rich in gold in 1859 by men enroute to California; and there followed a rapid immigration from the West as well as from the East. Other valuable deposits were revealed in Idaho in 1861 and 1863. Montana started the second semi-circle in 1860 and 1862, and possibly in 1858, which New Mexico in 1860, and Utah in 1867 completed. Then came the outposts of South Dakota in 1876 and Alaska in 1880. The dates of

* Shinn, C. H. *Mining Camps*, pp. 291-2.

† Bancroft, H. H. *Hist. of Wash., Idaho and Mont.*, p. 108.

‡ *Ibid.*, p. 406. Eggleston, Edw. *United States and Its People*, 1888, pp. 75-77.

admission to statehood confirm this truth and illustrate still further the influence of the mining industry. California, the first western State to receive the honor, entered the Union in 1850. Oregon and Nevada, two adjoining States, followed in 1859 and 1864, respectively. Although Utah's population was sufficient before 1870 to admit her with her semi-circle, for other reasons she was detained until 1896. In 1889 and 1890, the second semi-circle, begun abnormally by Colorado in 1876 (already an important mining State), was completed by the admission of Wyoming, Montana, Idaho and Washington. South Dakota was admitted in 1889, also, but not primarily on account of the mining population. Arizona, due in the sixties, and New Mexico due with Idaho and Wyoming, did not gain statehood until a very recent date. Their interests, although mostly mining, were relatively slight; and their populations consisted, beside the miners, mostly of Mexicans and Indians. As the widening waves of discovery spread from California as a center, so the wave of migration set in the same direction; and in the course of thirty years, with constant additions from the East, had beaten back across all the mountains, setting in motion the machinery of development in every State.*

* Chittenden, H. M. *Early Steamboat Navigation on The Missouri River*, 1903, Vol. II, pp. 265f.

THE GEOLOGY OF THE LAKE SUPERIOR REGION. A REVIEW*

The Lake Superior Region, noted as a producer both of iron and copper, has been more thoroughly studied than any other area of equal size in the United States. Among those who have worked on some part of the region are a large proportion of the leading geologists of America and also some from Europe.

Since early in the Nineteenth Century, geological surveys, under national, state or private supervision, have usually been in progress. The literature on this region is accordingly so enormous that it is difficult for a student to become familiar with all of it. It is therefore of prime importance to have an analysis of the phenomena and problems of the region as far as it is now understood. This monograph is the first attempt to discuss the region as a whole and, natu-

* The Geology of the Lake Superior Region. By Charles Richard Van Hise and Charles Kenneth Leith. 641 pp., 49 pls., 76 figs. *Monographs of the U. S. Geol. Surv.*, Vol. 52, 1911. Washington. 11½ x 9½.